

De Gull Wing

Two Dollars

"FOR MEMBERS ONLY"

March / April
Volume 2, Number 5

OFFICIAL PUBLICATION FOR OVER 2600 DELOREAN CLUB MEMBERS

TROUBLESHOOTING YOUR DELOREAN

We at De Lorean Motor Club handle over 60 calls average per week. Most problems of course arise from inexperienced mechanics trying to troubleshoot this vehicle like a 1960 Ford or Chevrolet. This obviously is impossible to accomplish. During the next few issues we will attempt to address the majority of these problems and their solutions. Should you need assistance, please contact us. Helpful Hint: When calling, if you have a parts manual and technical owners guide or part numbers you will expedite the solution to your problem.

TROUBLESHOOTING DIAGNOSTIC CHART

For DeLoreans

FUEL INJECTION SYSTEM • LAMBDA CONTROL SYSTEM • IDLE SPEED CONTROL SYSTEM

CONDITION															FAULT
	ENGINE WILL NOT START WHEN COLD	ENGINE WILL NOT START WHEN HOT	POOR COLD STARTING	POOR WARM STARTING	POOR IDLING - IN WARM-UP PHASE	POOR IDLING - WHEN ENGINE IS WARM	ENGINE BACKFIRES IN INTAKE MANIFOLD	ENGINE BACKFIRES IN EXHAUST	ENGINE MISFIRES WHILE DRIVING CAR	ENGINE POWER OUTPUT INSUFFICIENT	ENGINE RUNS ON TOO HIGH	FUEL CONSUMPTION TOO HIGH	CO% BY VOLUME TOO HIGH	CO% BY VOLUME AT IDLE TOO LOW	
X	X														Electric fuel pump does not run
X		X		X											Cold control pressure out of tolerance
	X		X		X	X		X	X				X		Warm control pressure too high
	X		X		X		X		X		X	X			Warm control pressure too low
		X													Hot start relay inoperative (if equipped)
X		X													Cold start valve does not open
		X	X	X	X		X		X	X	X	X			Cold start valve leaks
								X							Primary pressure out of tolerance
X	X	X	X												Sensor plate rest position set incorrectly
X	X	X	X	X	X			X	X	X		X			Sensor plate or control piston binding
X	X	X	X	X	X	X			X					X	Leaks in air intake system
X	X	X	X	X	X		X	X			X	X			General fuel system leaks
			X	X	X					X					Injection valves leak
			X		X		X		X		X	X			Idle CO adjustment too rich
			X	X	X	X			X					X	Idle CO adjustment too lean
			X	X			X	X							Injection valves not spraying properly
			X												Fuel accumulator leaks
			X												Seals in primary pressure valve or fuel pump leak
					X						X	X	X		Lambda E.C.U. malfunction
					X						X	X	X		Lambda sensor malfunction
									X		X	X			Lambda full-throttle micro-switch malfunction
											X	X			Lambda thermal switch malfunction
					X						X	X	X		Lambda frequency valve malfunction
				X	X										Idle speed E.C.U. malfunction
				X	X				X						Idle speed regulator inoperative or sticking
				X	X										Idle speed throttle micro-switch malfunction
				X	X										Idle speed thermistor malfunction

continued on page 2

IGNITION TIMING ADJUSTMENT

- STEP 1:** Connect tachometer to engine. Start engine and allow to warm up to normal operating temperature.
- STEP 2:** Check engine curb idle speed to see that it is within specification (775 RPM \pm 50, auto trans. in park). If idle speed is not within specification, perform "Idle Speed Control System Operation Test", in this issue.
- STEP 3:** Disconnect vacuum hose at distributor advance and check to see there is not vacuum at the hose. Reconnect hose to advance unit. If vacuum is present at hose during idle speed, diagnose malfunction in idle speed control system (i.e., limit switch adjustment, distributor vacuum cutoff solenoid, TVS switch).
- STEP 4:** Connect timing light to #1 cylinder and check ignition timing. Set timing to 13° \pm 2 BTDC at curb idle (775 RPM \pm 50), adjust timing by loosening distributor hold-down nut and rotating distributor assembly. Stop engine.
- STEP 5:** Tighten distributor hold-down nut and disconnect timing light.

CO EMISSION ADJUSTMENT

Since the De Lorean is equipped with an Idle Speed Control System, there is no provision to balance CO between left and right cylinder banks. This is due to the engine idle speed screw being completely closed and therefore non-functional. The only CO adjustment is total CO emission of left and right cylinder banks combined. This adjustment is performed with the air flow sensor adjusting screw.

ENGINE CO EMISSION CHECK:

- STEP 1:** Connect tachometer to engine.
- STEP 2:** Disconnect Lambda oxygen sensor wire from under vehicle at underbody connection located above left rear suspension. Do not attempt removing wire directly from oxygen sensor.
- STEP 3:** By-pass cooling fan temperature switch by disconnecting connectors from switch and installing a jumper wire between the terminals in the connectors. The temperature switch is located on the coolant pipe, left side of engine.
- STEP 4:** Remove both exhaust pipe plugs. Plugs are located in left and right exhaust pipes at exhaust manifolds.
- STEP 5:** Install exhaust gas probes and valve assembly, Tool No. 105336, in plug locations. Connect CO analyzer to probe and valve assembly.
- STEP 6:** Start engine and allow to warm up to normal operating temperature.
- STEP 7:** With both left and right gas probe assembly valves in the open position, read CO level. It should be 1.0% \pm .3% at an engine speed of 775 RPM \pm 50. If not, perform "Air Flow Sensor Adjustment".
- STEP 8:** Reconnect cooling fan temperature switch and Lambda oxygen sensor wire. Remove exhaust gas probe and valve assembly, Tool No. 105336, and install exhaust pipe plugs. Disconnect tachometer.

AIR FLOW SENSOR ADJUSTMENT:

The air flow sensor is adjusted to the proper CO level at the factory. The adjustment screw access hole in the mixture control unit is sealed at the factory to prevent tampering with this setting.

If the proper CO reading could not be achieved in Step 7 of the "Engine CO Emission Check", it may be necessary to readjust the air flow sensor. Before performing this adjustment, it is important to check the following:

- 1) Proper procedures were followed when performing the "Engine CO Emission Check".
- 2) Possible intake manifold leaks causing a lean condition.
- 3) Possible vacuum hose or crankcase leaks causing a lean condition.
- 4) Refer to fuel injection "Troubleshooting Chart" and check for possible causes, i.e., control pressure, cold start valve leaking, etc.

ADJUSTMENT PROCEDURE:

- STEP 1:** Perform Steps 1-7 of "Engine CO Emission Check".
- STEP 2:** Stop engine.
- STEP 3:** Remove air sensor adjustment access hole plug located between the fuel distributor and air flow sensor on the mixture control unit.
- STEP 4:** Start engine and insert allen wrench, Tool No. 105335, into air flow sensor adjusting access hole.
- STEP 5:** Adjust CO level to 1.0% \pm .3% at 775 RPM \pm 50.
- NOTE:** After each CO level adjustment, wrench must be removed and access hole covered to prevent a lean condition during CO reading. Counter-clockwise reduces total CO level and clockwise increases total CO level.
- STEP 6:** Stop engine, install new access hole plug.
- STEP 7:** Perform Step 8 of "Engine CO Emission Check".

LAMBDA SYSTEM OPERATION TEST

The purpose of this test is to check if the Lambda Emission Control System is working properly. This test is not intended to determine what component of the system is malfunctioning. If the vehicle fails any procedure within this test it is necessary to refer to the "Lambda Systems Diagnostic Chart".

- STEP 1:** Perform procedure for "Ignition Timing Adjustment" (All in this section) to check timing and curb idle speed.
- STEP 2:** Remove both exhaust pipe plugs. Plugs are located in left and right exhaust pipes at exhaust manifold.
- STEP 3:** Install exhaust gas probes and valve assembly, Tool No. 105336, in plug locations. Connect CO analyzer to probe and valve assembly. With both left and right gas probe valves in the open position read combined total CO level of right and left cylinder banks.
- STEP 4:** Connect dwell meter leads to diagnostic plug. The positive dwell lead is connected to the lower right corner terminal of the plug as viewed with the plug cover hinge on the right side. The negative dwell lead is connected to the terminal directly above the positive as viewed with the plug cover hinge on the right. Set the dwell meter to four (4) cylinder scale.

DMCA De Lorean Motor Club of America, Inc.

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THE COVER

DeLorean Troubleshooting Diagnostic Chart

DATA

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TECHNICAL

- STEP 5:** Disconnect Lambda oxygen sensor wire from under vehicle at underbody connection located above left rear suspension. Do not attempt removing wire directly from oxygen sensor.
- STEP 6:** Check for dwell reading to confirm correct hook-up and meter operation. Start engine and check pulse ratio of Lambda frequency valve by reading on dwell meter. Dwell should be steady within 40° to 50°. Record reading.
- STEP 7:** Check total CO reading. CO should be 1.0% ± .3% at curb idle speed (750 RPM).
- STEP 8:** Connect jumper wire to disconnected oxygen sensor lead which goes to ECU module. Ground jumper wire.
- STEP 9:** Check CO and dwell readings. The CO percentage should increase and dwell should be steady at a minimum of 87°.
- STEP 10:** Apply a 1.5 volt power source (flashlight battery) to jumper wire from ECU module.
- STEP 11:** Check CO and dwell readings. The CO percentage should decrease and the dwell should be steady at a maximum of 20°.
- STEP 12:** Reconnect the Lambda oxygen sensor wire.
- STEP 13:** Check total CO reading. CO should drop below 1.0% and dwell reading should fluctuate between 35° to 45°.

NOTE: If CO does not drop below 1.0%, raise engine speed to 1500 RPM. If CO now drops, check for leaks in exhaust manifold or mixture control unit to inlet manifold gasket.

- STEP 14:** Depress full-throttle microswitch with finger to simulate full-throttle condition. The microswitch is located at the rear of the engine adjacent to the thermostat housing cover.
- STEP 15:** Check CO and dwell readings. The CO percentage should increase and the dwell should be 50° to 60°. Release microswitch.
- STEP 16:** Remove exhaust gas probes and valve assembly, install exhaust pipe plugs, and disconnect dwell meter.

GIFTS FOR HIM/HER



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LET'S GET TECHNICAL

continued from page 3

IDLE SPEED CONTROL OPERATION TEST

The curb idle speed on the De Lorean Sports Car is non-adjustable. The speed is electronically controlled by an ECU module which is preset internally and cannot be altered. The module is also designed with a variable range fast idle circuit which is activated by a thermistor when coolant temperature is below 15° C (59°F). As the coolant temperature decreases below 15°C the fast idle speed increased proportionally to compensate for the resistance within the engine due to cold temperature.

The purpose of this test procedure is to verify that idle speed control system operates with the engine at normal operating temperature. If the vehicle experiences a problem with the fast idle circuit, it is necessary to perform a temperature-resistant test on the thermistor. These specifications follow the procedure below:

STEP 1: Connect tachometer to engine.

STEP 2: Start engine and allow to warm up to normal operating temperature. Read engine idle RPM. Idle speed should be 775 RPM \pm 50.

STEP 3: Remove air cleaner and disconnect wire from idle speed microswitch.

STEP 4: Read engine idle RPM. The RPM should increase. Reconnect microswitch wire.

STEP 5: Stop engine. Install air cleaner and remove tachometer.

If the vehicle failed any step in the above procedure, there is a possible malfunctioning component within the system. A list of items to check are as follows:

- a) #1 fuse blown.
- b) Restricted air filter element.
- c) Improper or no RPM pulse signal from coil terminal #1.
- d) Idle adjustment screw located on inlet manifold not completely closed.
- e) Vacuum leak at idle circuit by-pass pipe or hoses.
- f) Idle speed regulator shorted or open.
- g) Thermistor shorted in closed position giving a fast idle condition at all engine coolant temperatures.
- h) Idle speed microswitch misadjusted or internally open.
- i) Throttle plates not completely closed at idle.
- j) Open idle speed diode causing no electronic idle speed control operation.
- k) Shorted idle speed diode causing possible internal damage to idle speed ECU module by voltage feedback from distributor vacuum cut-off solenoid.
- l) Idle speed ECU module malfunctioning.
- m) Malfunction in Fuel Injection or Lambda system.

NON-MEMBER CALLS

Mentioned earlier was the number of calls DMCA handles weekly (60) from literally around the globe. We have discovered, sometimes too late, after spending 10 to 15 minutes on a solution to a problem, the person we're talking to is not a member. This is very time consuming and I know very aggravating to those of you that pay your dues and need assistance, calling only to find a busy signal. After July 1, 1984 members calling must have their MEMBERSHIP NUMBERS ready to give us over the phone to identify themselves as a member in good standing. We appreciate your cooperation in advance and believe this will eliminate repeat dialing to a busy signal.

PAINTING THE FRONT AND REAR FACIA

Use Ditzler Automotive paint. Color: Silver Poly, Code: DAU 33584.

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For display advertising rates call Tuesday or Thursday only, 10:00 A.M. to 3:00 P.M. at (714) 847-9940. Collect calls will not be accepted.

For Sale: 1982 De Lorean, 5 speed with mats, parts reference and shop manuals. All bugs out. \$15,000. For details, call me and I will call you back on my watts line. 3pm-10pm EST. (616) 774-0913

Vacation Rental: Hilton Head Island, S.C., Sea Pines, luxury villa, 2 Bdrms, 2 Baths, private hot tub, free tennis. Near beach & Harbour Town. Call (201) 846-2200 or (201) 297-9554.

For Sale: 1981 De Lorean, #7085, 5 speed, all original plus more. Exec. cond., 33,000 mi. Must sell. Asking \$15,200. Call Steve in AM at (201) 735-9446. **Make offer.**

For Sale: 1981 De Lorean, never registered. Garage kept & covered. Gray leather, 5 speed, 2150 mi. \$18,000. Call Pete Mon-Fri. (201) 467-9292 days & (201) 956-7777 eves.

For Sale: "Classic" 1957 T-Bird, white on white w/continental kit. Original owners family. Mint condition. Estate sale. Asking \$14,000. Sandy Mayo (213) 596-6616 or Bruce Mayo (213) 572-3492.

For Sale: 1981 De Lorean. Former Continental flight attendant. Must sell. One female owner, #878, excellent cond., black interior, 5 speed. Extended 5 yr. warranty, 19,000 mi. Best offer (505) 589-2222.

For Sale: De Lorean right Rear Quarter panel. Brand new, no trim. Shipping arranged. Call John Spavelko, RD1, Cecil, PA 15321. (412) 746-5045.

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